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ABSTRACT

The pamphlet provides tips for the consumer on how to save energy and dollars in and around the home; on the road in traveling for work, shopping, or leisure; and in the marketplace while buying a car, home, or appliance. (Author)

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Tips for Energy Savers

In and Around the Home
On the Road
In the Marketplace

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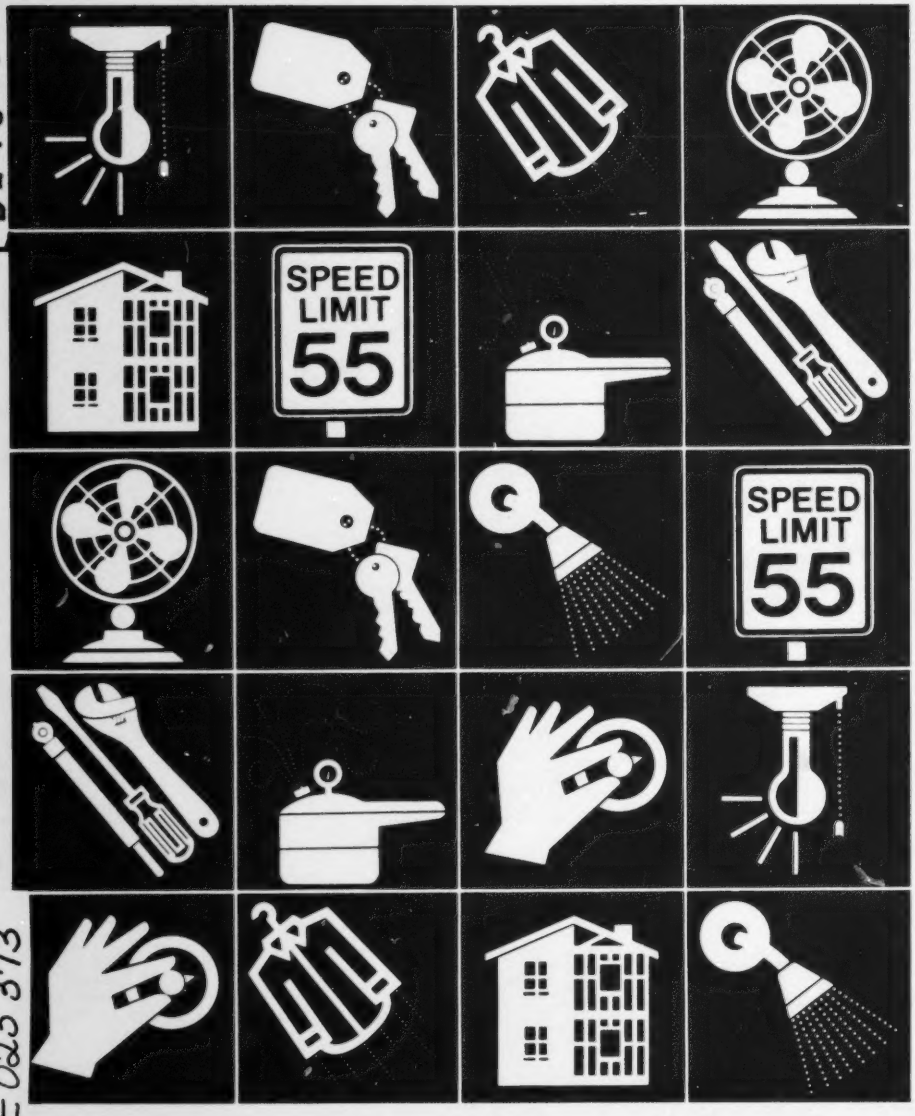
Energy Research and Development Administration



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THE WHITE HOUSE

WASHINGTON

FELLOW AMERICANS:

Today, America faces the most serious domestic challenge that it is likely to face in our lifetimes - the energy challenge.

Our ability to meet this challenge will help determine whether we will be able to maintain our American way of life during the closing decades of the 20th century. If we ignore the challenge today by failing to act, our children will pay a heavy price for our short sightedness.

The challenge is that domestic demand for energy keeps rising faster than domestic supply. Any program that seeks to deal with that imbalance must begin restraining this runaway growth in energy demand.

We have a National Energy Plan to help meet the challenge. Its cornerstone is conservation, in industry, in transportation, in the home. Its success will depend on the cooperation, dedication and commitment of the American people.

These "Tips for Energy Savers" can be a tool in our fight to curb energy demand. Much of our Nation's finite energy is used inefficiently. The suggestions contained in this booklet help you to curb that waste, and save yourselves money as well. By saving energy we can protect jobs, the environment, and the basic American standard of living, not only for ourselves, but also for our children and grandchildren. We must succeed.

Jimmy Carter

Tips for Energy Savers

In and Around the Home
On the Road
In the Marketplace

Federal Energy Administration

FEA/D-77/212
August 1977

Energy Research and Development Administration

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"Nature never gives anything away. Everything is sold at a price. It is only in the ideals of abstraction that choice comes without consequence."
—Ralph Waldo Emerson

Energy Use in the United States

And What We Can Do About It

Americans use more energy per person than any other people in the world. We have only 6 percent of the world's population, but we use about one-third of all the energy consumed on this globe. Our total national energy cost in 1975 amounted to about $170 billion, and each year this cost is steadily rising.

Where does all this energy go?

Our industry takes about 36 percent. Our commerce uses about 11 percent for enterprises including stores, offices, schools, and hospitals. Our residences take about 26 percent. And transportation accounts for another 29 percent or so.

Most of the energy we use in the United States comes from petroleum (crude oil). Because domestic production falls short of our needs, we have to import almost half of it, at a cost of $45 billion a year (at 1977 rates).

Expert estimates of our known and potential domestic reserves vary, but most likely we have somewhere between a 25 to 30 year supply of oil, if we keep our energy-use growth rate at about 2 percent per year.

However, if we continue using energy as we have become accustomed to, we could run out of domestic oil supplies in the year 2007, and we may run out of natural gas even sooner. The severe winter of 1976-1977 painfully dramatized the natural gas situation with its complex supply and economic problems.

The overall energy situation in the United States is not rosy: Energy demand keeps rising; energy prices keep going up; the availability and future costs of supplies remain uncertain.

What can we do about it?

Conserve energy. This will help us extend our supplies and reduce our import burdens until we develop new energy technologies and resources.

Without personal hardship, we could easily cut our energy use by an estimated 30 percent or more—saving energy for our country and money for ourselves.

The energy we use for our homes and automobiles—gas, oil, electricity—draws on all of our energy resources. Cutting back on these uses is the simplest, most effective way to make our resources last longer. And each individual conservation effort, multiplied by millions, can serve as an "energy bank"—a supply that can be used to help balance our energy accounts.

We can conserve if we make energy thrift a part of our way of life—adopting commonsense energy habits. This booklet contains some practical advice on how you can help.

How to Save Energy and $$$ . . . At Home

How to Save Energy and $$$ . . . At Home

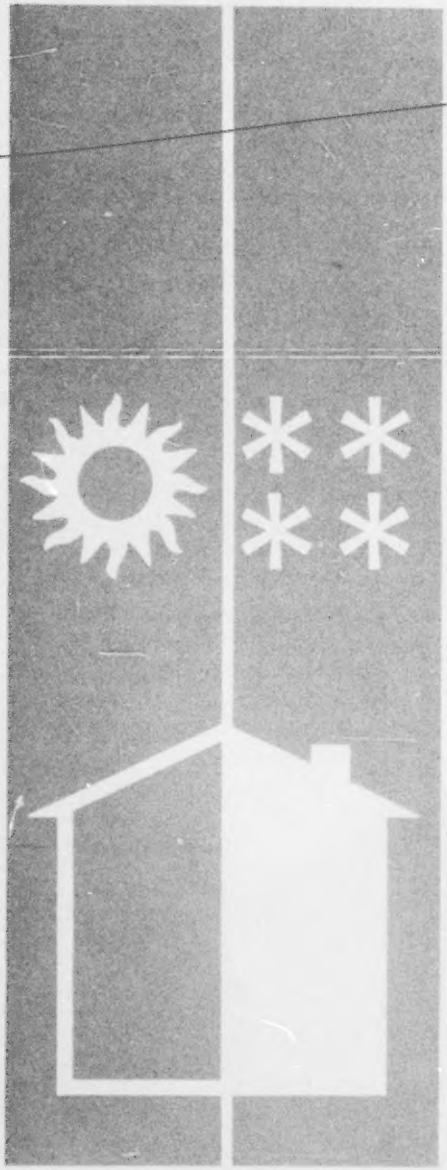
Where does our residential energy go?

Most of it, 70 percent, is used to heat and cool our homes. An additional 20 percent goes for heating water, the second-largest home energy user and expense. The remaining 10 percent goes into lighting, cooking, and running small appliances.

We can cut our energy use and family costs by making our homes energy efficient, even if we have to spend some money to do it. The money we spend now will be returned through lower utility bills month after month. And then the savings are all ours—as good as a tax-free raise in income.

Note: Because energy use and utility costs vary in different parts of the country, money-saving potentials are expressed in percentages and costs in averages. Although utility costs will be reduced for those who follow these conservation measures, utility bills may actually rise because of increased energy prices.

Protect Your Home From Outside Heat and Cold



About 40 million single-family homes in the United States are not adequately protected from outside weather, according to Federal Energy Administration estimates.

Here are some tips to make sure yours is not one of them.

Insulate

No matter how you heat or cool your home, you can reduce the load on your heating and cooling equipment by as much as 20 to 30 percent by investing a few hundred dollars in insulation. That's about as much as it would cost you to buy a color television set. But the benefits of insulation—lower utility costs—continue for years.

- **Find out if your home needs insulation.** Your needs will depend on the climate in which you live and the amount of insulation, if any, you already have. For guidance, consult with a reputable insulation dealer in your community or with your local building inspector or county agent.
- **Find out about R-values** before you buy your insulation materials. Then buy the thickness of insulation that will give you the R-value you should have.

Heating Zone Map

Heating Zone	Recommended for	
	Ceiling	Floor
0,1	R-26	R-11
2	R-26	R-13
3	R-30	R-19
4	R-33	R-22
5	R-38	R-22

R-Values	Batts or Blankets		Loose Fill (Poured In)		
	glass fiber	rock wool	glass fiber	rock wool	cellulosic fiber
R-11	3½"-4"	3"	5"	4"	3
R-13	4"	4½"	6"	4½"	3½"
R-19	6"-6½"	5¼"	8"-9"	6"-7"	5"
R-22	6½"	6"	10"	7"-8"	6"
R-26	8"	8½"	12"	9"	7"-7½"
R-30	9½"-10½"	9"	13"-14"	10"-11"	8"
R-33	11"	10"	15"	11"-12"	9"
R-38	12"-13"	10½"	17"-18"	13"-14"	10"-11"

R-values or numbers are insulation efficiency ratings. The "R" stands for resistance to winter heat loss or summer heat gain. The higher the R-number, the more effective the insulating capability. The numbers should appear on packages of all insulation materials: mineral, glass fiber, or rock wool batts or blankets; foam or loose fill materials that are poured or blown into insulation spaces; or rigid board insulation.

If the insulation you buy doesn't have the R-value written on the package, ask the salesperson to write the R-value on your receipt for future references.

Sources for R-value information include: Federal Energy Administration; National Bureau of Standards, U.S. Department of Commerce; American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE); and insulation manufacturers.

- **Insulate or increase the amount of insulation in your attic floor or top floor ceiling** to a minimum of R-26 for these spaces.

If you have old insulation in your attic, you probably won't be able to judge its R-value. But if you have less than 6 inches of old insulation, chances are you need more to bring the insulation level up to the recommended level. (See the heating zone map for guidance.)

Investment costs could range from $80 to $600. Heating and cooling savings should range from somewhere around 5 percent, if you are adding to present insulation, to as much as 30 percent if you have no insulation.

If attic insulation were added to the 15 million single-family homes that need it, we'd save about 8 percent in your heating oil each winter day.

- **Consider insulating exterior walls.** This is an expensive measure that requires the services of a contractor, but it may be worth the cost if you live in a very hot or very cold climate. There should be enough space in the walls to accomodate blown-in insulation that is at least R-11 to R-13.

  Costs range from 60 cents to 90 cents per square foot. Savings could amount to 16 to 20 percent of utility costs.

- **Insulate floors over unheated spaces** such as crawl spaces and garages.

Costs could range from $200 to $400. Savings could amount to about 8 percent on your heating and cooling costs.

Draft-Proof Windows and Doors

- **Test your windows and doors for airtightness.** Move a lighted candle around the frames and sashes of your windows. If the flame dances around, you need caulking and/or weatherstripping.

  Try slipping a quarter under the door. If it goes through easily, you need weatherstripping.

- **Caulk and weatherstrip doors and windows.** It's easy to do yourself. Caulking and weatherstripping materials cost about $25 for the average house (12 windows, 2 doors). Savings in annual energy costs could amount to 10 percent or more.

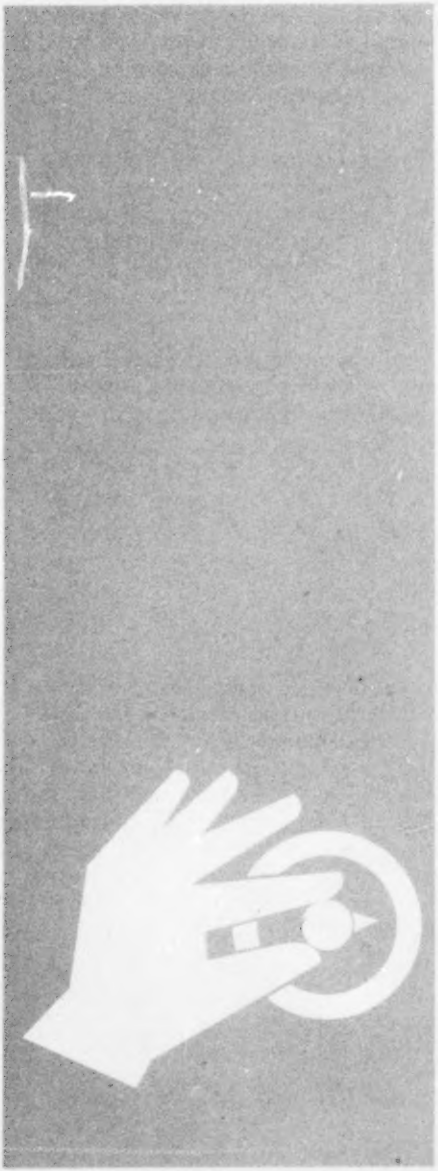
> **If every gas-heated home were properly caulked and weatherstripped,** we'd save enough natural gas each year to heat about 4 million homes.

- **Install storm windows.** Combination screen and storm windows (triple-track glass combination) are the most convenient and energy efficient because they can be opened easily when there is no need to run heating or cooling equipment. They cost about $30 each.

  Alternatives range from single-pane storm windows (about $10 each), which have to be removed to admit outside air, to clear plastic film (a total of about $10 for the average home), which can be taped tightly to the inside of the window frames.

  Savings in reduced space heating costs for any of these types of protection can amount to as much as 15 percent a year. Adding storm doors in very cold or very hot climates could increase these savings.

Heating and Cooling



Heating and cooling our homes account for most of our residential energy costs. Don't waste any of that precious conditioned air, whether you pay for it yourself or pay your landlord for it.

During both heating and cooling seasons . . .

- **Close off unoccupied rooms** and shut their heat or air-conditioning vents; or turn off room air-conditioners. (This does not apply if you have a heat pump system. Leave it alone; shutting vents could harm a heat pump.)
- **Use kitchen, bath, and other ventilating fans sparingly.** In just 1 hour these fans can blow away a houseful of warmed or cooled air. Turn them off just as soon as they have done their job.
- **Keep your fireplace damper closed unless you have a fire going.** An open damper in a 48-inch square fireplace can let up to 8 percent of your heat out the chimney.

Heating Energy Savers

Don't turn the heat on until you have to. On cool evenings use your fireplace instead and add a blanket at night.

With heating equipment . . .

- **If you use electric furnace heating, consider a heat pump system.** The heat pump uses thermal energy from outside air for both heating and cooling. Costs for these pumps

run from about $2,000 for a whole-house unit to about $425 for room size. But they can cut your use of electricity for heating by 30 to 40 percent and also can provide some savings in cooling costs.

- **If you plan to buy a new gas heating system,** ask your gas utility or public service commission about the savings potental of electronic ignition. Ask also about possibilities for retrofitting the system you may already own.

- **Consider the advantages of a clock thermostat for your heating system.** The clock thermostat will turn the heat down for you automatically at a regular hour before you retire and turn it up again before you wake. While you can easily turn your thermostat back at night and up again in the morning yourself, the convenience of a clock thermostat may be worth the $70 to $90 cost to you.

- **Consider buying a properly sized furnace that incorporates an automatic flue gas damper.** This device reduces the loss of heat when the furnace is off. (Contact your gas utility or oil supplier for guidance.)

- **Don't use your fireplace for supplemental heating when your furnace is on** unless you take one of the measures suggested below to lessen the loss of heated air from the house.

  The warmth from a fire on the hearth generally doesn't radiate through the house; the heat gain is confined to the room with the fireplace. And when your furnace is on, too, a considerable amount of heated air from the rest of the house flows into the fireplace and goes wastefully up the chimney. Then the temperature in other rooms of the house goes down, and the furnace uses more fuel to raise it to the level controlled by the thermostat. So you use more fuel, rather than less, when the furnace and fireplace are both going.

- **Lessen heat loss when you use your fireplace when the furnace is on:**

  — **Lower the thermostat setting to 50 to 55 degrees.** Some warmed air will still be lost, but the furnace won't have to use as much fuel to heat the rest of the house to these temperatures as it would to raise the heat to 65 degrees.

  — **Close all doors and warm air ducts entering the room with the fireplace and open a window near the fireplace about ½ to 1 inch.** Air needed by the fire will be provided through the open window and the amount of heated air drawn from the rest of the house will be reduced.

  — **If you have a simple open masonry fireplace, consider installing a glass front or a glass screen.** This will cut down on the loss of warmed air through the flue.

When the heat is on . . .

- **Lower your thermostat to 65 degrees during the day and 55 degrees at night.** You can save about 3 percent on your fuel costs for every degree you reduce the *average temperature* in your home. In addition, you can save about 1 percent on your heating bills for every degree you dial down *only at night.*

- **Keep windows near your thermostat tightly closed,** otherwise it will keep your furnace working after the rest of the room has reached a comfortable temperature.

- **Have your oil furnace serviced at least once a year,** preferably each summer to take advantage of off-season rates. This simple precaution could save you 10 percent in fuel consumption.

- **Clean or replace the filter in your forced-air heating system each month.**

- **Check the duct work for air leaks about once a year if you have a forced-air heating system.** To do this, feel around the duct joints for escaping air when the fan is on.

  Relatively small leaks can be repaired simply by covering holes or cracks with duct tape. More stubborn problems may require caulking as well as taping. You could save almost 9 percent in heating fuel costs this way.

- **If you have oil heat, check to see if the firing rate is correct.** Chances are it isn't. A recent survey found that 97 percent of the furnaces checked were overfired.

  If your oil furnace doesn't run almost constantly on a very cold day, call a service man.

- **Don't let cold air seep into your home through the attic access door.** Check the door to make sure it is well insulated and weatherstripped, otherwise you'll be wasting fuel to heat that cool air.

- **Dust or vacuum radiator surfaces frequently.** Dust and grime impede the flow of heat. And if the radiators need painting, use flat paint, preferably black. It radiates heat better than glossy.

- **Keep draperies and shades open in sunny windows; close them at night.**

- **For comfort in cooler indoor temperatures, use the best insulation of all—warm clothing.**

  The human body gives off heat, about 390 Btu's per hour for a man, 330 for a woman. Dressing wisely can help you retain natural heat.

  Wear closely woven fabrics. They add at least a half a degree in warmth.

  For women. Slacks are at least a degree warmer than skirts.

  For men and women. A light long-sleeved sweater equals almost 2 degrees in added warmth; a heavy

long-sleeved sweater adds about 3.7 degrees; and two lightweight sweaters add about 5 degrees in warmth because the air between them serves as insulation to keep in more body heat.

If every household in the United States lowered its average heating temperatures 6 degrees over a 24-hour period, we would save more than 570,000 barrels of oil per day or more than 3.5 percent of our current oil imports.

Cooling Energy Savers

Overcooling is expensive and wastes energy. Don't use or buy more cooling equipment capacity than you actually need.

Regarding air-conditioning equipment . . .

- **If you need central air-conditioning, select the smallest and least powerful system that will cool your home adequately.** A larger unit than you need not only costs more to run but probably won't remove enough moisture from the air.

  Ask your dealer to help you determine how much cooling power you need for the space you have to cool and for the climate in which you live. (For further information, see page 19, Energy Efficiency Ratios.)

- **Make sure the ducts in your air-conditioning system are properly insulated,** especially those that pass through the attic or other uncooled spaces. This could save you almost 9 percent in cooling costs.

- **If you don't need central air-conditioning, consider using individual window or through-the-wall units** in rooms that need cooling from time to time. Select the smallest and least powerful units for the rooms you need to cool. As a rule, these will cost less to buy and less to operate.

- **Install a whole-house ventilating fan** in your attic or in an upstairs window to cool the house when it's cool outside, even if you have central air-conditioning.

  It will pay to use the fan rather than air-conditioning when the outside temperature is below 82 degrees. When windows in the house are open, the fan pulls cool air through the house and exhausts warm air through the attic.

When you use air-conditioning . . .

- **Set your thermostat at 78 degrees,** a reasonably comfortable and energy-efficient indoor temperature.

  The higher the setting and the less difference between indoor and outdoor temperature, the less outdoor hot air will flow into the building.

  If the 78° F. setting raises your home temperature 6 degrees (from 72° F. to 78° F., for example), you should save between 12 and 47 percent in cooling costs, depending on where you live.

- **Don't set your thermostat at a colder setting than normal when you turn your air-conditioner on.** It will NOT cool faster. It WILL cool to a lower temperature than you need and use more energy.
- **Set the fan speed on high except in very humid weather.** When it's humid, set the fan speed at low; you'll get less cooling but more moisture will be removed from the air.
- **Clean or replace air-conditioning filters at least once a month.** When the filter is dirty, the fan has to run longer to move the same amount of air, and this takes more electricity.
- **Turn off your window air-conditioners when you leave a room for several hours.** You'll use less energy cooling the room down later than if you had left the unit running.
- **Consider using a fan with your window air-conditioner** to spread the cooled air farther without greatly increasing your power use. But be sure the air-conditioner is strong enough to help cool the additional space.
- **Don't place lamps or TV sets near your air-conditioning thermostat.** Heat from these appliances is sensed by the thermostat and could cause the air-conditioner to run longer than necessary.

With or without air-conditioning . . .

- **Keep out daytime sun** with vertical louvers or awnings on the outside of your windows, or draw draperies, blinds, and shades indoors.

You can reduce heat gain from the sun by as much as 80 percent this easy way.

- **Keep lights low or off.** Electric lights generate heat and add to the load on your air-conditioner.
- **Do your cooking and use other heat-generating appliances in the early morning and late evening hours whenever possible.**
- **Open the windows instead of using your air-conditioner or electric fan** on cooler days and during cooler hours.
- **Turn off the furnace pilot light** in summer, but be sure it's re-ignited before you turn the furnace on again.
- **Dress for the warmer indoor temperatures.** Neat but casual clothes of lightweight open-weave fabrics are most comfortable.

  A woman will feel cooler in a lightweight skirt instead of slacks. A man will feel cooler in a short-sleeved shirt than in a long-sleeved shirt of the same weight fabric.

Without air-conditioning . . .

- **Be sure to keep windows and outside doors closed during the hottest hours of the day.**
- **Use window or whole-house ventilating fans to cool the house when it's cool outside** (see page 17 for more information about whole-house fans).
- **Use vents and exhaust fans** to pull heat and moisture from the attic,

kitchen, and laundry directly to the outside.

If everyone raised air-conditioning temperatures 6 degrees, we'd save the equivalent of 36 billion kilowatt-hours of electricity used in the Nation in 1 year.

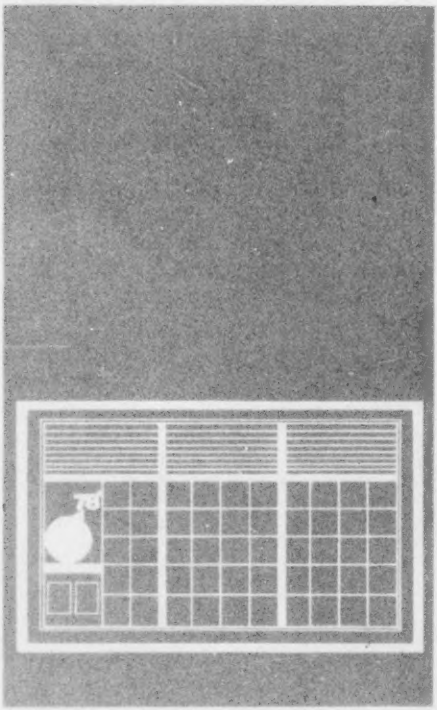
Energy-Efficiency Ratios for Air-Conditioners

If you're in the market for a room air-conditioner before the new labels are in place, you should be aware of the Energy Efficiency Ratio numbers that were developed for these appliances during an earlier voluntary appliance labeling program. They still may be in use in your community.

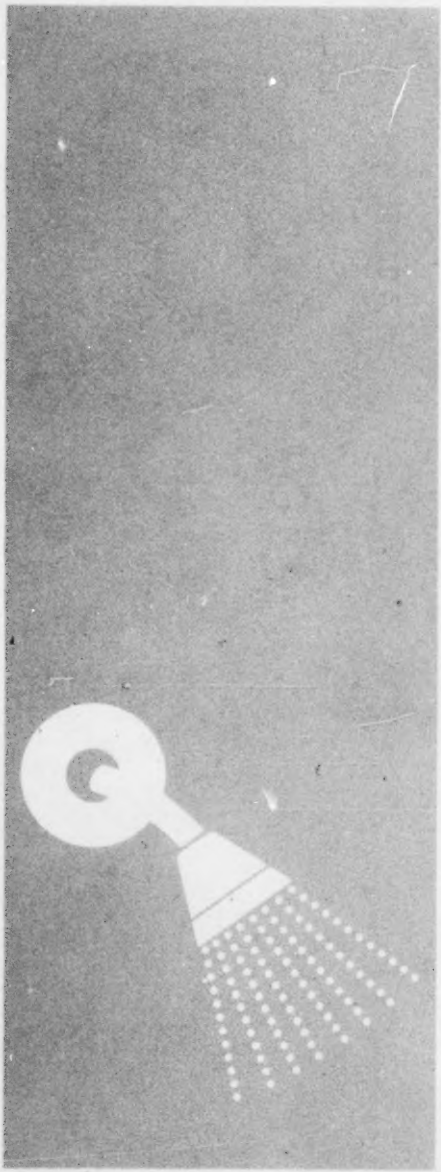
The Energy Efficiency Ratio (EER) is a number that rates the energy efficiency of similar appliances. The higher the EER number, the more efficient the appliance. The EER numbers are approved by the U.S. Department of Commerce's National Bureau of Standards before they can be used.

Example: EER's for room air-conditioners can be as low as 5.4 and as high as 11.5. The 11.5-rated room air-conditioner is more than twice as efficient as the 5.4 unit and uses less than half the electrical energy.

Manufacturers and dealers display the EER numbers in different ways. If you cannot find the EER number of the models you are considering, you should be able to get the information from the dealer.



Hot Water Energy Savers



Heating water accounts for about 20 percent of all the energy we use in our homes. Don't waste it.

- **Repair leaky faucets promptly.** One drop a second can waste as much as 60 gallons of hot or cold water in a week.
- **Do as much household cleaning as possible with cold water.**
- **Insulate your hot water storage tank and piping.**

Water Heaters

Energy-efficient water heaters may cost a little more initially, but reduced operating costs over a period of time can more than make up for the higher outlay.

- **Buy a water heater with thick insulation on the shell.** While the initial cost may be more than one without this conservation feature, the savings in energy costs over the years will more than repay you.
- **Add insulation around the water heater you now have if it's inadequately insulated,** but be sure not to block off needed air vents. That would create a safety hazard, especially with oil and gas water

heaters. When in doubt, get professional help. When properly done, you should save about $15 a year in energy costs.

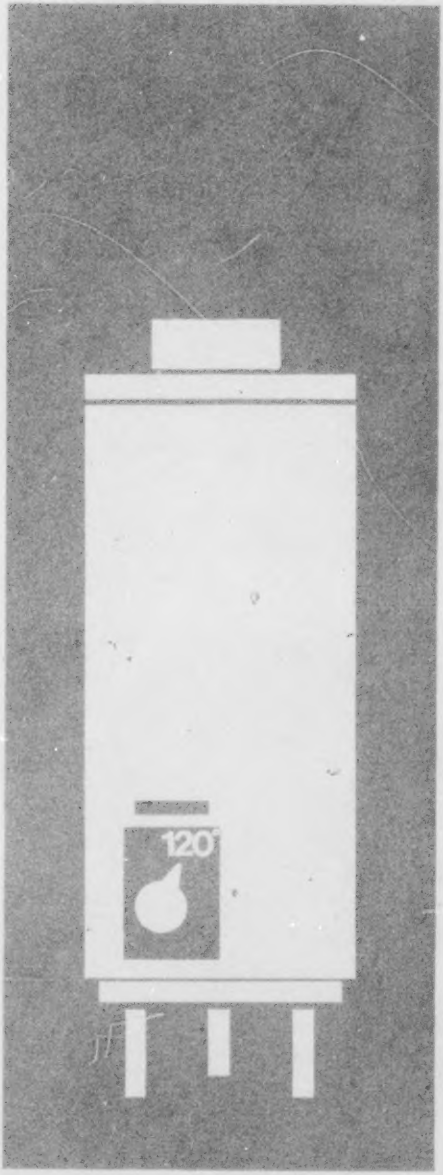
- **Check the temperature on your water heater.** Most water heaters are set for 140° F. or higher, but you may not need water that hot unless you have a dishwasher. A setting of 120 degrees can provide adequate hot water for most families.

  If you reduce the temperature from 140 degrees (medium) to 120 degrees (low), you could save over 18 percent of the energy you use at the higher setting. Even reducing the setting 10 degrees will save you more than 6 percent in water heating energy.

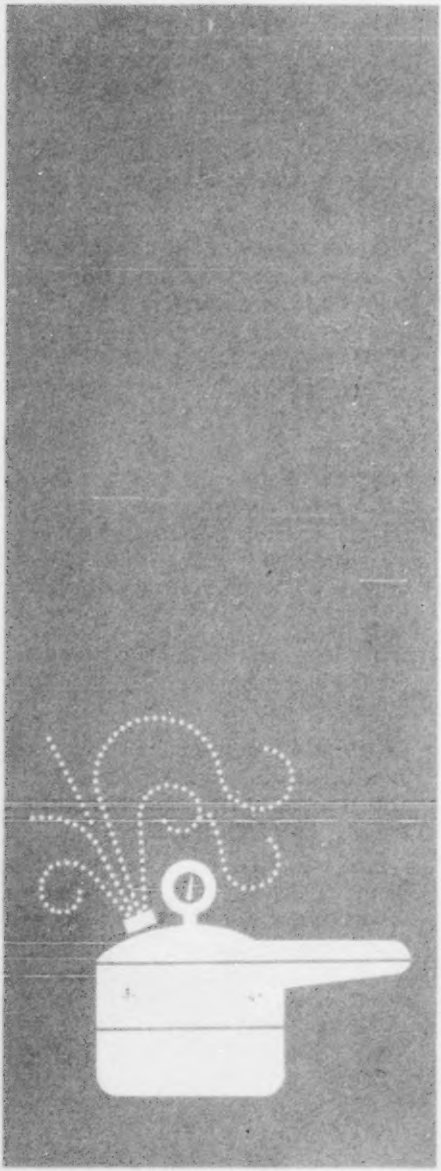
  If you are uncertain about the tank water temperature, draw some water from the heater through the faucet near the bottom and test it with a thermometer.

- **Don't let sediment build up in the bottom of your hot water heater,** it lowers the heater's efficiency and wastes energy. About once a month, flush the sediment out by drawing several buckets of water from the tank through the water heater drain faucet.

Additional hot water energy savers appear in other sections of this booklet.



Energy Savers in the Kitchen, Laundry, and Bath



Kitchen Energy Savers

Cooking Energy Savers

- **Use cold water rather than hot to operate your food disposer.** This saves the energy needed to heat the water, is recommended for the appliance, and aids in getting rid of grease. Grease solidifies in cold water and can be ground up and washed away.
- **Install an aerator in your kitchen sink faucet.** By reducing the amount of water in the flow, you use less hot water and save the energy that would have been required to heat it. The lower flow pressure is hardly noticeable.
- **If you need to purchase a gas oven or range, look for one with an automatic (electronic) ignition system instead of pilot lights.** you'll save an average of up to 47 percent of your gas use—41 percent in the oven and 53 percent on the top burners.
- **If you have a gas stove, make sure the pilot light is burning efficiently** —with a blue flame. A yellowish flame indicates an adjustment is needed.
- **Never boil water in an open pan.** Water will come to a boil faster and use less energy in a kettle or covered pan.
- **Keep range-top burners and reflectors clean.** They will reflect the heat better, and you will save energy.

- **Match the size of pan to the heating element.** More heat will get to the pan; less will be lost to surrounding air.
- **If you cook with electricity, get in the habit of turning off the burners several minutes before the allotted cooking time.** The heating element will stay hot long enough to finish the cooking for you without using more electricity.
- **When using the oven, make the most of the heat from that single source.** Cook as many foods as you can at one time. Prepare dishes that can be stored or frozen for later use or make all oven-cooked meals.
- **Watch the clock or use a timer;** don't continually open the oven door to check food. Every time you open the door heat escapes and your cooking takes more energy.
- **Use small electric pans or ovens for small meals** rather than the kitchen range or oven. They use less energy.
- **Use pressure cookers and microwave ovens if you have them.** They can save energy by reducing cooking time.

Dishwashing Energy Savers

The average dishwasher uses 14 gallons of hot water per load. Use it energy efficiently.

- **Be sure your dishwasher is full,** but not overloaded, when you turn it on.
- **When buying a dishwasher, look for a model with air-power and/or overnight dry settings.** These features automatically turn off the dishwasher after the rinse cycle. This can save you up to one-third of your total dishwashing energy costs.
- **Let your dishes air dry.** If you don't have an automatic air-dry switch, turn off the control knob after the final rinse. Prop the door open a little and the dishes will dry faster.
- **Don't use the "rinse hold" on your machine.** It uses 3 to 7 gallons of hot water each time you use it.
- **Scrape dishes before loading them into the dishwasher** so you won't have to rinse them. If they need rinsing, use cold water.

If every dishwasher user in the country cut out just one load a week, we'd save almost 15 million kilowatt-hours of electricity every day or the equivalent of about 9,000 barrels of oil a day.

How to Save Electricity Before it Comes to You

During late afternoon and early evening hours the load on the Nation's electrical systems usually reaches its peak. To meet the heavy demand, electric utilities often must use back-up generating equipment that is not energy efficient.

- Try to use energy-intensive appliances such as dishwashers, clothes washers and dryers, and electric ovens in the early morning or late evening hours to help reduce that peakload.

> If everyone scheduled household chores during offpeak hours, the utilities' daily fuel use would be reduced, and the Nation's energy would be conserved.

Refrigerator/Freezer Energy Savers

- **Don't keep your refrigerator or freezer too cold.** Recommended temperatures: 38 to 40 degrees for the fresh food compartment of the refrigerator; 5 degrees for the freezer section. (If you have a separate freezer for long-term storage, it should be kept at 0°F., however.)
- **If you're buying a refrigerator, it's energy economical to buy one with a power-saver switch.** Most refrigerators have heating elements in their walls or doors to prevent "sweating" on the outside. In most climates, the heating element does not need to be working all the time.

  The power-saver switch turns off the heating element. By using it, you could save about 16 percent in refrigerator energy costs.
- **Consider buying refrigerators and freezers that have to be defrosted manually.** Although they take more effort to defrost, these appliances use less energy than those that defrost automatically.
- **Regularly defrost manual-defrost refrigerators and freezers.** Frost buildup increases the amount of energy needed to keep the engine running. Never allow frost to build up more than one-quarter of an inch.
- **Make sure your refrigerator door seals are airtight.** Test them by closing the door over a piece of paper or a dollar bill so it is half in and half out of the refrigerator. If you can pull the paper or bill out easily, the latch may need adjustment or the seal may need replacing.

Laundry Energy Savers

You can save considerable amounts of energy in the laundry through conservation of hot water and by using your automatic washers and dryers less often and more efficiently.

- **Wash clothes in warm or cold water, rinse in cold.** You'll save

energy and money. Use hot water only if absolutely necessary.

Washing Machines

- **Fill washers** (unless they have small-load attachments or variable water levels), but do not overload them.
- **Use the suds saver if you have one.** It will allow you to use one tubful of hot water for several loads.
- **Don't use too much detergent.** Follow the instructions on the box. Oversudsing makes your machine work harder and use more energy.
- **Pre-soak or use a soak cycle when washing heavily soiled garments.** You'll avoid two washings and save energy.

Clothes Dryers

- **Fill clothes dryers but do not overload them.**
- **Keep the lint screen in the dryer clean.** Remove lint after each load. Lint impedes the flow of air in the dryer and requires the machine to use more energy.
- **Keep the outside exhaust of your clothes dryer clean.** Check it regularly. A clogged exhaust lengthens the drying time and increases the amount of energy used.
- **If your dryer has an automatic dry cycle,** use it. Overdrying merely wastes energy.
- **Dry your clothes in consecutive loads.** Stop-and-start drying uses more energy because a lot goes into bringing the dryer up to the desired temperature each time you begin.
- **Separate drying loads into heavy and lightweight items.** Since the lighter ones take less drying time, the dryer doesn't have to be on as long for these loads.
- **If drying the family wash takes more than one load, leave small, lightweight items until last.** You may be able to dry them, after you turn off the power, with heat retained by the machine from earlier loads.
- **Save energy by using the old-fashioned clothesline.** As a bonus, clothes dried outdoors often seem fresher and cleaner than those taken from a mechanical dryer.

Ironing

- **Remove clothes that will need ironing from the dryer while they still are damp.** There's no point in wasting energy to dry them thoroughly if they only have to be dampened again.

- **You can save ironing time and energy by "pressing" sheets and pillow cases on the warm top of your dryer.** Fold them carefully, then smooth them out on the flat surface.

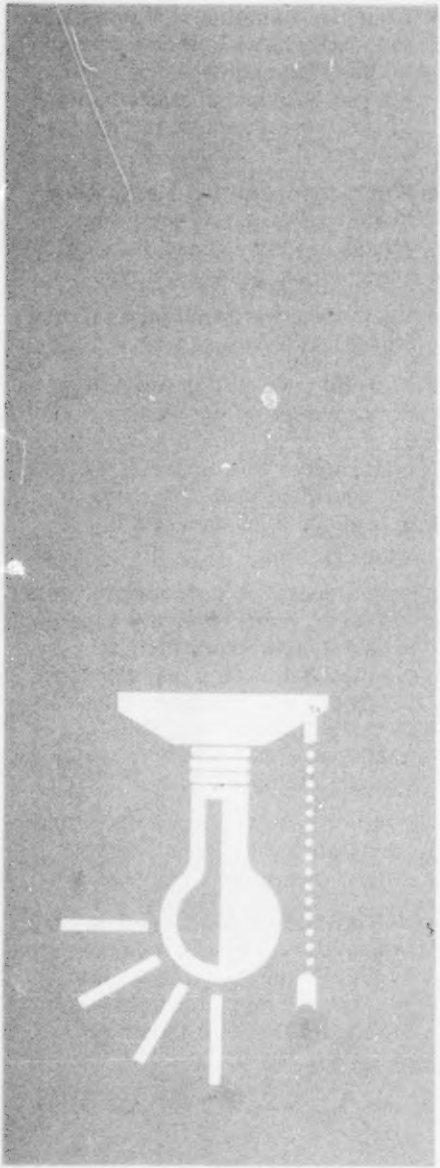
- **Save energy needed for ironing by hanging clothes in the bathroom while you're bathing or showering.** The steam often removes the wrinkles for you.

Bathroom Energy Savers

- **Take showers rather than tub baths** but limit your showering time and check the water flow if you want to save energy. It takes about 30 gallons of water to fill the average tub. A shower with a flow of 4 gallons of water a minute uses only 20 gallons in 5 minutes Assuming you use half hot and half cold water for bathing, you would save about 5 gallons of hot water every time you substitute a shower for a bath. Thus, if you substituted just one shower for one bath per day, you would save almost 2,000 gallons of hot water in a year.

- **Consider installing a flow restrictor in the pipe at the showerhead.** These inexpensive, easy-to-install devices restrict the flow of water to an adequate 3 to 4 gallons per minute. This can save considerable amounts of hot water and the energy used to produce them over a year's time. For example, reducing the flow from 8 to 3 gallons a minute would save the average family about $24 a year.

Lighting Energy Savers



It's easy to use more light than you need.

More than 16 percent of the electricity we use in our homes goes into lighting. Most Americans overlight their homes, so lowering lighting levels is an easy conservation measure.

Indoor Lighting

- **Light-zone your home and save electricity.** Concentrate lighting in reading and working areas and where it's needed for safety (stairwells, for example). Reduce lighting in other areas, but avoid very sharp contrasts.
- **To reduce overall lighting in non-working spaces,** remove one bulb out of three in multiple light fixtures and replace it with a burned-out bulb for safety. Replace other bulbs throughout the house with bulbs of the next lower wattage.
- **Consider installing solid state dimmers or hi-low switches** when replacing light switches. They make it easy to reduce lighting intensity in a room and thus save energy.
- **Use one large bulb instead of several small ones in areas where bright light is needed.**
- **Use long-life incandescent lamps only in hard-to-reach places.** They are less energy efficent than ordinary bulbs.
- **Need new lamps?** Consider the advantages of those with three-way switches. They make it easy to keep lighting levels low when intense

light is not necessary, and that saves electricity. Use the high switch only for reading or other activities that require brighter light.

- **Always turn three-way bulbs down to the lowest lighting level when watching television.** You'll reduce the glare and use less energy.
- **Use low-wattage night-light bulbs.** These now come in 4-watt as well as 7-watt sizes. The 4-watt bulb with a clear finish is almost as bright as the 7-watt bulb but uses about half as much energy.
- **Try 50-watt reflector floodlights in directional lamps** (such as pole or spot lamps). These flood lights provide about the same amount of light as the standard 100-watt bulbs but at half the wattage.
- **Try 25-watt reflector flood bulbs in high-intensity portable lamps.** They provide about the same amount of light but use less energy than the 40-watt bulbs that normally come with these lamps.
- **Use fluorescent lights whenever you can; they give out more lumens per watt.** For example, a 40-watt fluorescent lamp gives off 80 lumens per watt and a 60-watt incandescent gives off only 14.7 lumens per watt. The 40-watt fluorescent lamp would save about 140 watts of electricity over a 7-hour period. These savings, over a period of time, could more than pay for the fixtures you would need to use fluorescent lighting.
- **Consider fluorescent lighting for the kitchen sink and countertop areas.** These lights set under kitchen cabinets or over countertops are pleasant and energy efficient.
- **Fluorescent lighting also is effective for makeup and grooming areas.** Use 20-watt deluxe warm white lamps for these areas.
- **Keep all lamps and lighting fixtures clean.** Dirt absorbs light.
- **You can save on lighting energy through decorating.** Remember, light colors for walls, rugs, draperies, and upholstery reflect light and therefore reduce the amount of artificial light required.

Outdoor Lighting

- **Have decorative outdoor gas lamps turned off unless they are essential for safety or convert them to electricity.** Keeping just eight gas lamps burning year-round uses as much natural gas as it takes to heat an average-size home for a winter heating season.

  By turning off one gas lamp, you'll save from $40 to $50 a year in natural gas costs.
- **Use outdoor lights only when they are needed.** One way to make sure they're off during the daylight hours is to put them on a photocell unit or timer that will turn them off automatically.

Appliance Energy Savers

About 8 percent of all the energy used in the United States goes into running electrical home appliances, so appliance use and selection can makes a considerable difference in home utility costs. Buying energy-efficient appliances may cost a bit more initially but that expense is more than made up by reduced operating costs over the lifetime of the appliance.

Energy efficiency may vary considerably though models seem similar. In the next few years it will be easier to judge the energy efficiency of appliances with the Government's appliance labeling program. (See page 31 for details.) In the meantime, wise selection requires a degree of time and effort.

You will find a number of tips on how to save energy when buying or using appliances in other sections of this booklet, but here are a few general ideas to consider.

- **Don't leave your appliances running when they're not in use.** It's a total waste of energy. Remember to turn off your radio, TV, or record player when you leave the room.
- **Keep appliances in good working order** so they will last longer, work more efficiently, and use less energy.
- **When buying appliances, comparison shop.** Compare energy use information and operating costs of similar models by the same and different manufacturers. The re-

tailer should be able to help you find the wattage of the appliance. With that information, and the list of appliances on pages 32 -33 you should be able to figure out how much it will cost you to run the appliance you choose.

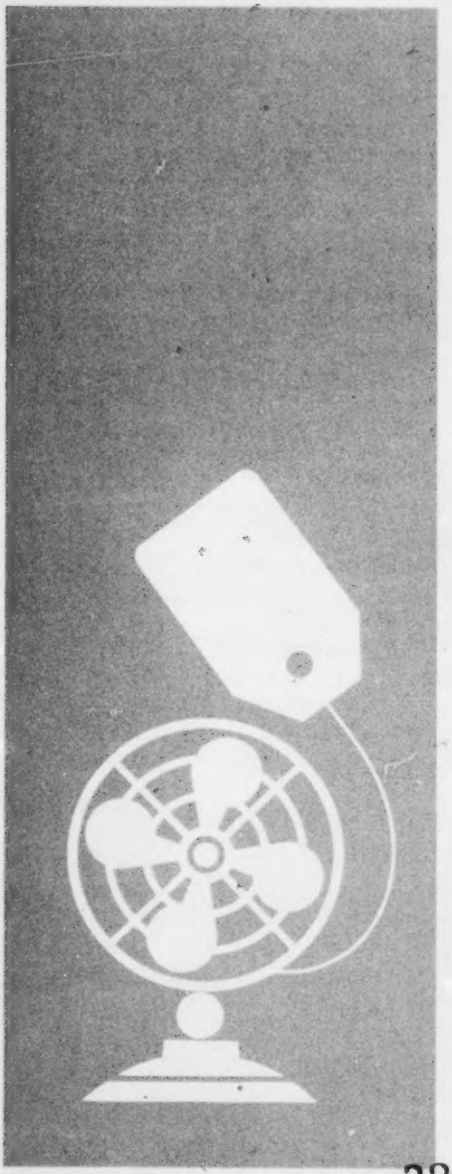
The list shows the estimated annual energy use of some household appliances. With this information, you should be able to figure your approximate energy use and cost for each item listed. You also should get a good idea of which appliances in your home use the most energy and where energy conservation practices will be the most effective in cutting utility costs.

- **Before buying new appliances with special features, find out how much energy they use compared with other, perhaps less convenient, models.** A frost-free refrigerator, for example, uses more energy than one you have to defrost manually. It also costs more to purchase. The energy and dollars you can save with a manual-defrost model may be worth giving up the convenience.

- **Use appliances wisely;** use the one that takes the least amount of energy for the job. For example: toasting bread in the oven uses three times more energy than toasting it in a toaster.

- **Don't use energy-consuming special features on your appliances if you have an alternative.** For example, don't use the "instant-on" feature of your TV set. "Instant-on" sets, especially the tube types, use energy even when the screen is dark. Use the "vacation switch," if you have one, to eliminate this waste; plug the set into an outlet that is controlled by a wall switch; or have your TV service man install an additional on-off switch on the set itself or in the cord to the wall outlet.

The Appliance Labeling Program



This labeling program is designed to help consumers shop for energy-saving household appliances and equipment. It is being developed by the Federal Energy Administration and the Federal Trade Commission as a result of the Energy Policy and Conservation Act, signed into law on December 22, 1975.

Under that law, manufacturers must place labels showing estimated annual operating costs on all models of the following:

- Central air-conditioners
- Clothes dryers
- Clothes washers
- Dishwashers
- Freezers
- Furnaces
- Home heating equipment, not including furnaces
- Humidifiers and dehumidifiers
- Kitchen ranges and ovens
- Refrigerators and refrigerator-freezers
- Room air-conditioners
- Television sets
- Water heaters

Appliance testing, labeling, and public information procedures are currently being developed. You should be hearing about the appliance labels, as they become available in 1978 and 1979, through Government information programs.

For further information about the appliance labeling program, write the Federal Energy Administration, Appliance Program, Washington, D.C. 20461.

Annual Energy Requirements of Electric Household Appliances*

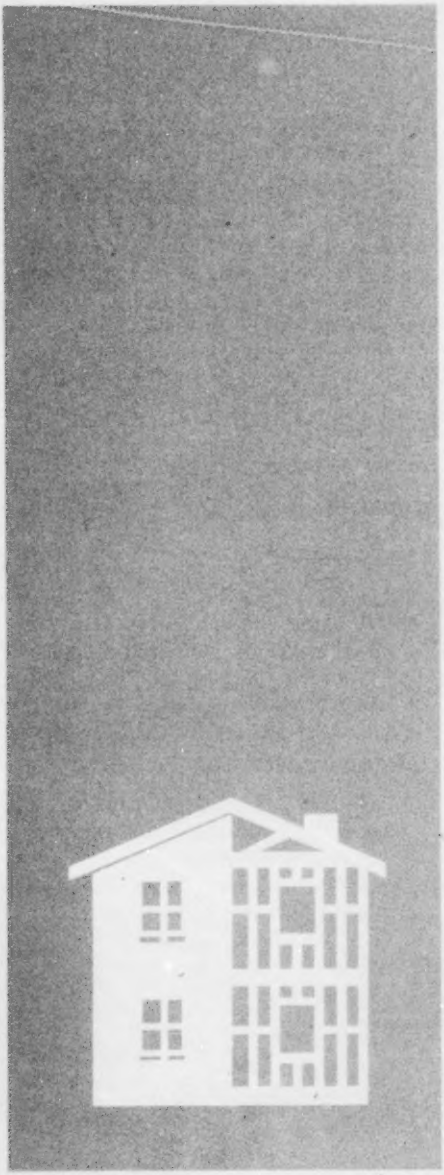
* Source: Edison Electric Institute

	Est. kWh used annually
Major Appliances	
Air-Conditioner (room) (Based on 1000 hours of operation per year. This figure will vary widely depending on geographic area and specific size of unit)	860
Clothes Dryer	993
Dishwasher including energy used to heat water	2,100
Dishwasher only	363
Freezer (16 cu. ft.)	1,190
Freezer—frostless (16.5 cu. ft.)	1,820
Range with oven	700
with self-cleaning oven	730
Refrigerator (12 cu. ft.)	728
Refrigerator—frostless (12 cu. ft.)	1,217
Refrigerator/Freezer (12.5 cu. ft.)	1,500
Refrigerator/Freezer—frostless (17.5 cu. ft.)	2,250
Washing Machine—automatic (including energy used to heat water)	2,500
washing machine only	103
Washing Machine—non-automatic (including energy to heat water)	2,497
washing machine only	76
Water Heater	4,811
Kitchen Appliances	
Blender	15
Broiler	100
Carving Knife	8
Coffee Maker	140
Deep Fryer	83
Egg Cooker	14
Frying Pan	186
Hot Plate	90
Mixer	13
Oven, Microwave (only)	190
Roaster	205
Sandwich Grill	33
Toaster	39
Trash Compactor	50
Waffle Iron	22
Waste Disposer	30

	Est. kWh used annually
Heating and Cooling	
Air Cleaner	216
Electric Blanket	147
Dehumidifier	377
Fan (attic)	291
Fan (circulating)	43
Fan (rollaway)	138
Fan (window)	170
Heater (portable)	176
Heating Pad	10
Humidifier	163
Laundry	
Iron (hand)	144
Health & Beauty	
Germicidal Lamp	141
Hair Dryer	14
Heat Lamp (infrared)	13
Shaver	1.8
Sun Lamp	16
Toothbrush	.5
Vibrator	2
Home Entertainment	
Radio	86
Radio/Record Player	109
Television	
Black & white	
Tube type	350
Solid state	120
Color	
Tube type	660
Solid state	440
Housewares	
Clock	17
Floor Polisher	15
Sewing Machine	11
Vacuum Cleaner	46

Note:
When using these figures for projections, such factors as the size of the specific appliance, the geographic area of use, and individual use should be taken into consideration.

Building or Buying a Home



Energy-wasting mistakes can be avoided if you consider climate, local building codes, and energy-efficient construction when you build or buy a home. In either case, the following energy conservation ideas should help you keep down home utility bills.

When Building a Home . . .

- **Consider a square floor plan.** It usually is more energy efficient than a rectangular plan.
- **Insulate walls and roof to the highest specifications recommended for your area.***
- **Insulate floors, too, especially those over crawl spaces, cold basements, and garages.***
- **If the base of a house is exposed, as in the case of a mobile home, build a "skirt" around it.**
- **Install louvered panels or wind-powered roof ventilators** rather than motor-driven fans to ventilate the attic. Only use a motor-driven fan if it can be used for whole-house ventilating during cool periods.
- **Consider solar heat gain when you plan your window locations.**

  In cool climates, install fewer windows in the north wall because there's little solar heat gain there in winter.

* See Heating Zone Map, page 10.

In warm climates, put the largest number of windows in the north and east walls to reduce heating from the sun.

- **Install windows you can open** so you can use natural or fan-forced ventilation in moderate weather.
- **Use double-pane glass throughout the house.** Windows with double-pane heat-reflecting or heat-absorbing glass provide additional energy savings, especially in south and west exposures.
- **Place your refrigerator in the coolest part of the kitchen,** well away from the range and oven.
- **Install the water heater as close as possible to areas of major use** to minimize heat loss through the pipes; insulate the pipes.
- **If you live in a warm climate, remember that light-colored roofing can help keep houses cooler.**

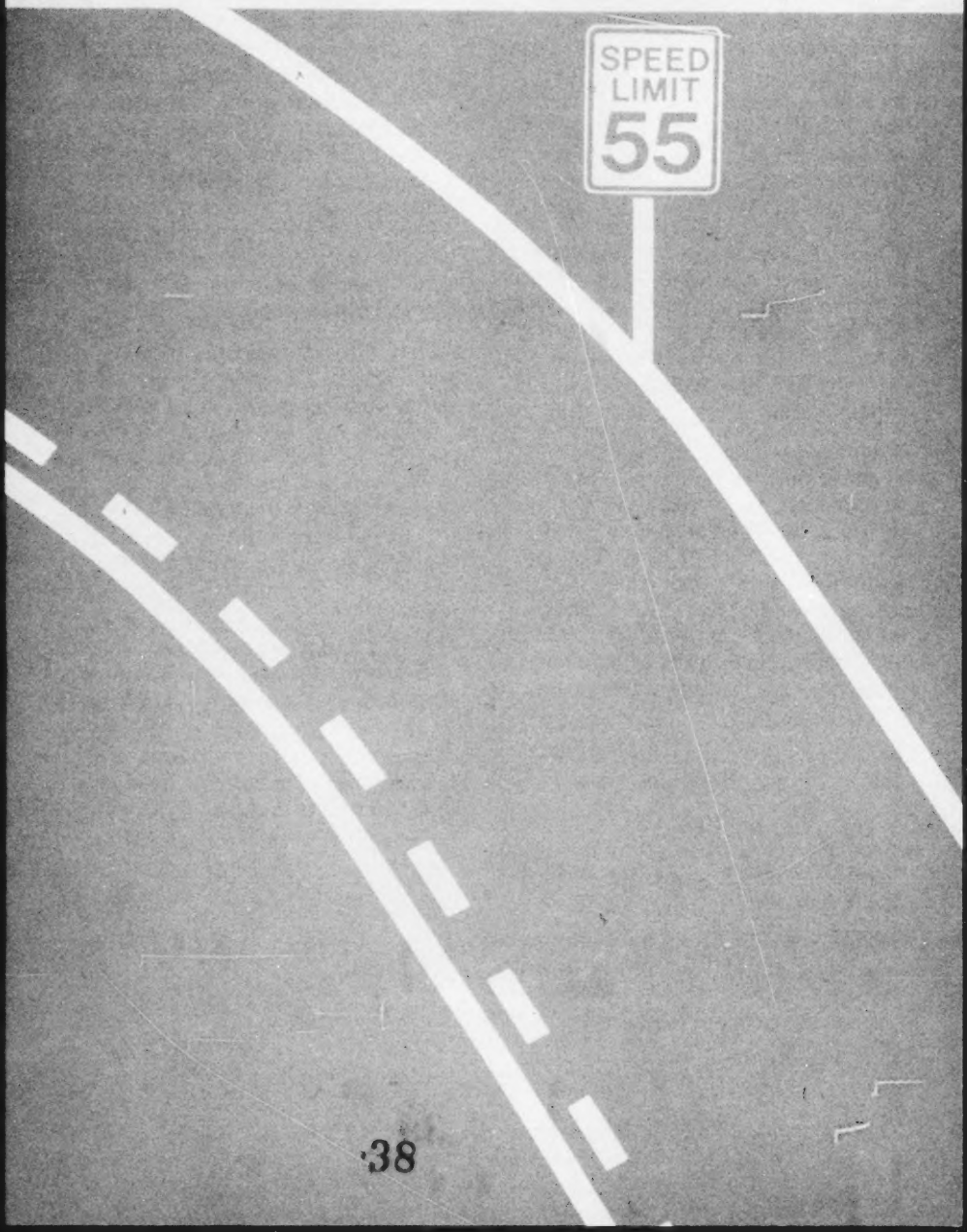
When Buying a Home . . .

- **Consider all the ideas mentioned for building a house.**
- **Ask for a description of the insulation and data on the efficiency of space heating, air-conditioning, and water heating plants,** or have an independent engineer advise you about the efficiency of the equipment. Ask to see the utility bills from the previous year but remember to adjust them for current utility rates. Even some *new* houses don't have insulation in the exterior walls. Be sure to check.
- **Consider the need for additional insulation or replacement of equipment.** If improvements are necessary, you may want to seek an adjustment in the purchase price to cover all, or a reasonable share, of the costs.

Yard and Workshop Energy Savers

- **Plant deciduous trees and vines on south and west sides of the home** to provide shade in the summer and sunshine in the winter.
- **Do not allow gasoline-powered yard equipment to idle for long periods.** Turn off the equipment when you finish one job and restart it when you're ready to resume work.
- **Use hand tools, hand lawn mowers, pruners and clippers whenever possible.**
- **Maintain electrical tools in top operating condition.** They should be clean and properly lubricated.
- **Keep cutting edges sharp.** A sharp bit or saw cuts more quickly and therefore uses less power. Oil on bits and saws reduces friction and therefore also reduces power required.
- **Buy power tools with the lowest horsepower adequate for the work you want to do.**
- **Remember to turn off shop lights, soldering irons, gluepots, and all bench heating devices right after use.**

On the Road



On the Road

There are more than 100 million registered automobiles in the United States. A typical car, with an average fuel economy of less than 15 miles per gallon, travels about 10,000 miles each year and uses well over 650 gallons of gasoline.

Altogether, our private automobiles consume some 70 billion gallons of gasoline each year. That's about 4.5 million barrels a day or about two-thirds of the amount of petroleum currently being imported into the United States.

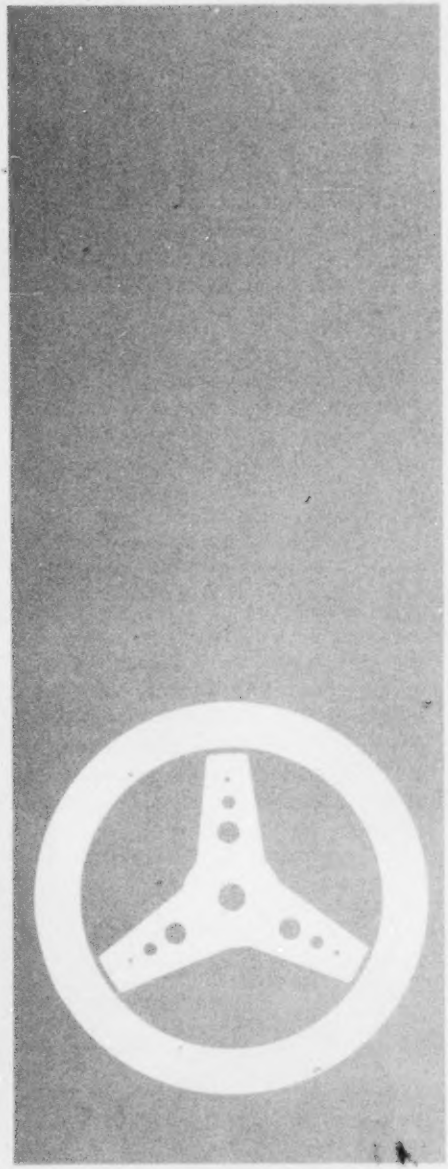
The importance of individual gasoline savings cannot be overemphasized. If, for example, the fuel used by the average car were reduced just 15 percent through fewer daily trips, better driving practices, and better maintenance, the Nation's use of petroleum would fall by nearly two-thirds of a million barrels per day, or about 3.5 percent of demand.

We all can improve on our conservation efforts on the road. Here are some of the ways. . .

- **Use public transportation, a motorcycle, a moped, or a bicycle, or walk to work.**
- **Share your ride.** Join a carpool or a vanpool. About one-third of all private automobile mileage is for commuting to and from work.
- **Go shopping with a neighbor occasionally.** If the average occupancy (currently 1.3 people per commuter car) were increased by just 1 person, each commuter would reduce his costs, energy consumption, and driving stress. And the nationwide gasoline savings—which would reduce our reliance on more expensive imports—would be more than 600,000 barrels per day.
- **Eliminate unnecessary trips.** Can you find one driving trip per week that could be handled by telephone or combined with another trip? If every automobile took just one less 10-mile trip a week, the Nation would save 3½ billion gallons of gas a year, or nearly 5 percent of the total passenger car demand for gas.

If just 1 gallon of gasoline were saved each week for every automobile in the country, we'd save about 5.6 billion gallons of gasoline in a year or about 8 percent of the demand created by all our passenger cars.

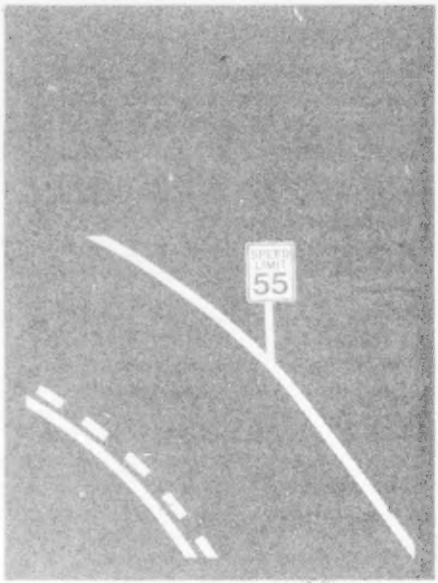
Driving Energy Efficiently



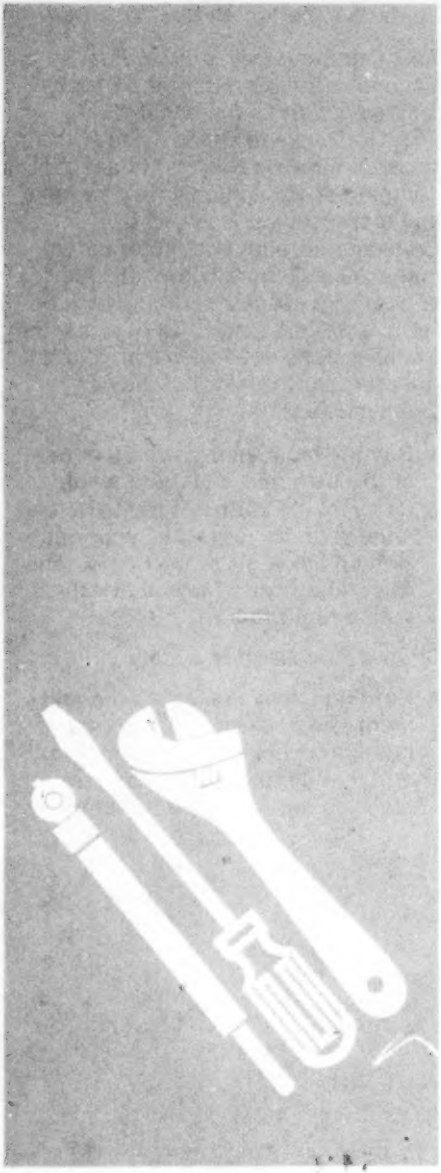
The driving technique of the person behind the wheel is the most important single element in determining the fuel economy of any car. A careful driver may get 20 percent more miles per gallon than the average driver and 50 percent more than a wasteful one.

- **Observe the 55-mph speed limit** on the highway. Most automobiles get about 20 percent more miles per gallon on the highway at 55 mph than they do at 70 mph.
- **Accelerate smoothly and moderately.** Achieve your desired speed quickly, and then keep a steady pressure on the accelerator, just enough to maintain speed.
- **Drive at a steady pace.** Avoid stop-and-go traffic. Frequently check the traffic situation well ahead of you. Adjust your driving to avoid unnecessary, wasteful accelerations and decelerations.

- **Minimize braking.** Anticipate speed changes. Take your foot off the accelerator as soon as you see a red light or slowed traffic ahead.
- **Don't let the motor idle for more than a minute.** Turn off the engine. It takes less gasoline to restart the car than it takes to let it idle. Generally there is no need to press the accelerator down to restart the engine.
- **Don't overfill your tank.** Remove the nozzle or ask the gas station attendant to remove it when the automatic valve closes. This will eliminate any chance of spillage.
- **Plan your trips carefully.** Select routes that will allow you to consolidate errands and avoid congested areas.
- **Use your head** before you drive. Plan your trips. Try to use these tips as you drive. Record your gasoline use, and try to get more miles per gallon out of your car.



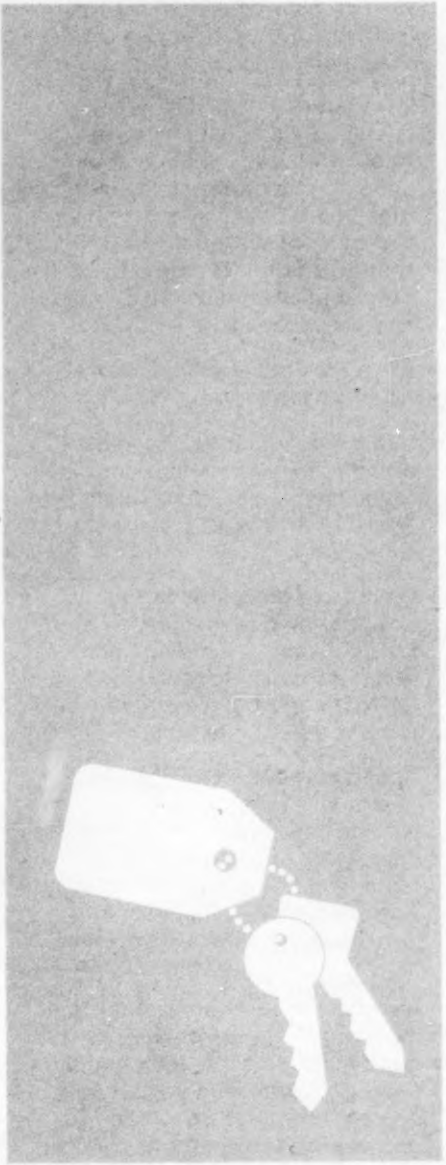
Maintaining Your Car



Good car maintenance and a wise selection of accessories can mean fuel economy and dollars saved.

- **Have your car tuned** as recommended by the manufacturer. Regular tune-ups extend engine life and improve performance. A poorly tuned car could use as much as 3 to 9 percent more gasoline than a well-tuned one. The tune-up will pay for itself in gasoline savings and car reliability.
- **Keep the engine filters clean.** Clogged filters waste gasoline.
- **Use the gasoline octane and oil grade** recommended for your car. If you change the oil yourself, take the used oil to your service station for recycling.
- **Check tire pressures regularly.** Underinflated tires increase gas use. You can lose about 2 percent in fuel economy for every pound of pressure under the recommended pounds per-square-inch.
- **Consider radial tires.** They can mean from 3 to 5 percent improvement in gas mileage in the city, 7 percent on the highway, and 10 percent at 55 mph after the tires are warmed up for 20 minutes. And they last longer, too. Never mix radials with conventional tires.
- **Remove unnecessary weight from the car.** The lighter the car, the less gas it uses. An extra 100 pounds decreases fuel economy about 1 percent for the average car, 1¼ percent for small cars.

Buying a Car



Study the Market Before You Buy

Ask your dealer, or write to Fuel Economy, Pueblo, Colorado 81009, for a free copy of the latest "EPA/FEA Gas Mileage Guide." Study the fuel economy figures and tables that compare specifications. Review mileage test results publicized by Consumers Union and motor industry magazines. Generally the best fuel economy is associated with low vehicle weight, small engines, manual transmissions, low axle ratio, and low frontal area (the width of the car times its height).

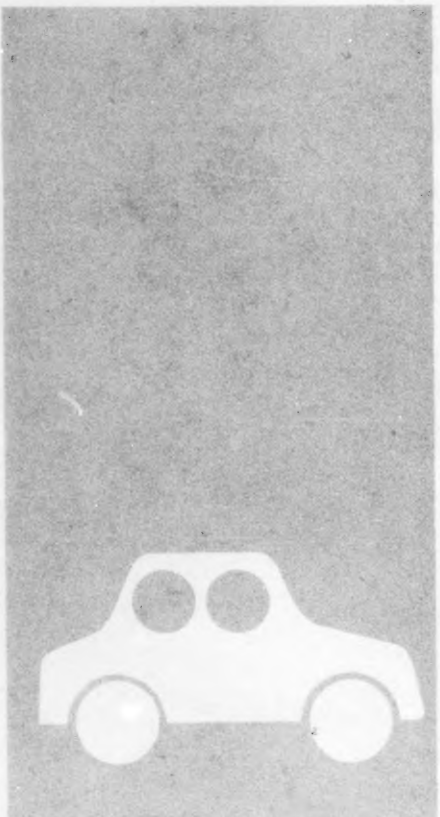
- **Buy the most energy-efficient car of the size and style you want.** Don't let the car price alone determine your choice. Make your decision on the basis of the combination of purchase price and your estimated fuel costs.

Choose Accessories Wisely

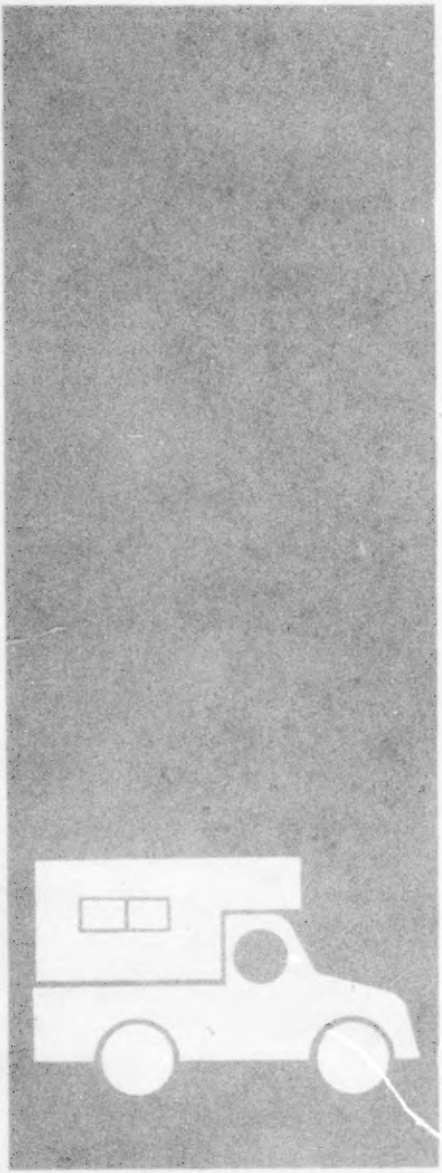
- **Purchase only the optional equipment and accessories you really need.** Items like air-conditioning, automatic transmission, and power steering require considerable

energy, all of which is derived from burning gasoline. Other equipment, such as power brakes, electric motor-driven windows, seats and radio antennas, require less energy for their operation, but all accessories add to the vehicle weight—and this reduces fuel economy.

- **Don't buy an air-conditioner unless you really need it.** Even when you're not using it, it adds to the weight of the car.
- **If you have a car air-conditioner** or other power-draining accessories, use them sparingly. The cooling equipment reduces fuel economy from 10 percent on the highway up to almost 20 percent in stop-and-go traffic.

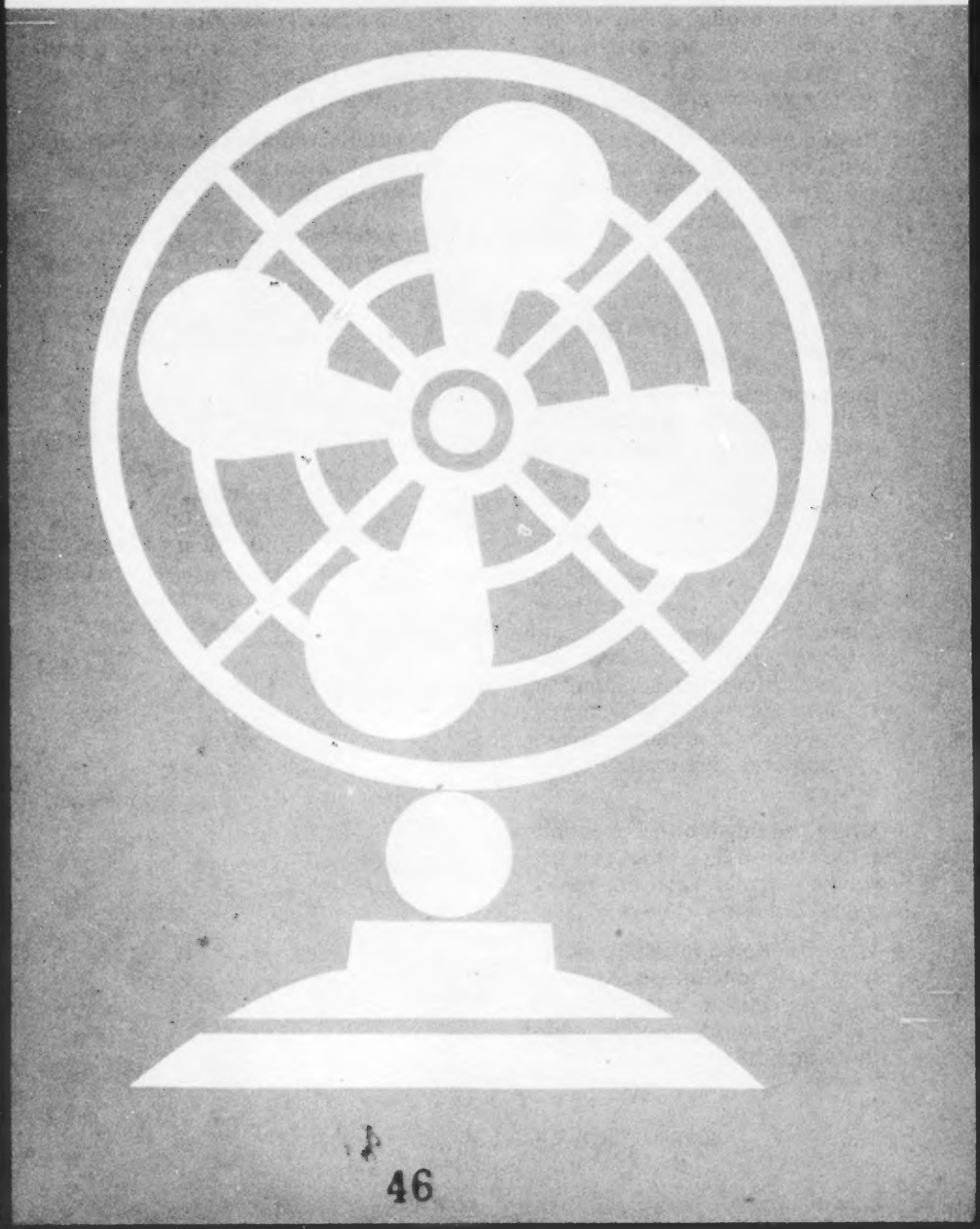


Taking Vacations



- **Vacation at home this year.** Discover nearby attractions.
- **Choose a hotel or campground close to where you live.** A nearby hotel or campground often can provide as complete and happy a change from routine as one that is hundreds of miles away.
- **Plan to stay in one place** if you vacation away from home. "Hopping around" takes transportation energy.
- **Take a train or a bus instead of the family car.** Save gasoline and relax.
- **Rediscover the pleasures of walking, hiking, and bicycling during your vacation.** They're the most energy-conserving means of transportation and the healthiest for most people.
- **Save energy at home if you're going away.** Remember to turn off lights, lower heating temperatures in winter, and turn off air-conditioning in summer.

In the Marketplace



In the Marketplace

- **Try to buy products that will last.** More durable products save the energy that would be required to make replacements more often.
- **Buy equipment on the basis of initial cost plus operating costs rather than on the basis of purchase price alone.** Often products that are energy efficient cost more to buy. But over the lifetime of the equipment, you will more than make up the difference in lower operating costs.
- **Buy products made of recycled materials or those that can be recycled**—steel, aluminum, paper, and glass among others. More energy is used in the production of products from virgin materials than from recycled or reclaimed materials. For example, producing steel from scrap requires only one-quarter of the energy it would take when using virgin ores. Making a product from recycled aluminum requires less than 10 percent of the energy that would be needed for the same product made from the ore.
- **When you buy fabrics or garments, try to choose those that can be washed in cold water** and/or require little or no ironing.
- **When shopping for an unusual item, telephone ahead to see if the store has it.** If it doesn't, you save the energy and time of traveling there and being disappointed.
- **Give gifts with year-round benefits.** If you have appliances on your gift list, select long-lasting models that use the least amount of energy.
- **Don't buy motorized equipment or gadgets when hand-operated versions will do.**
- **Buy the household equipment that's right for you.** Purchasing the right equipment for your home and needs, using it wisely, and taking good care of it can reduce energy costs considerably.
- **Bigger isn't necessarily better.** Don't buy a larger or more powerful piece of equipment than you need. Whether it's a furnace, air-conditioner, or water heater, make sure its size and power are right for your home. Ask your dealer, a trade association, or a consumer-interest group for assistance in judging this factor.